In the Claims

What is claimed is:

1. (Currently Amended) A welding system comprising:

a power source having a controller to regulate welding operation;

an electrode holder configured to hold an electrode in relative proximity to a workpiece such that a welding arc is created between the electrode and the workpiece, the electrode holder having a trigger attached thereto that when activated commences a welding process;

a transmitter configured to detect activation of the trigger and responsive thereto transmit a signal indicative of a desired welding operation through a weld cable at a frequency ~~within an extremely low radio frequency (ELF) range~~ within a range of approximately 1.3 Hz to 100 Hz; and

a receiver remote from the transmitter and configured to receive the signal and instruct the controller to regulate the power source according to the desired welding operation.

2. (Original) The welding system of claim 1 wherein the transmitter is further configured to transmit the signal through a pair of weld cables and the electrode holder.

3. (Original) The welding system of claim 1 wherein the desired welding operation includes at least one of a magnitude of power source output and a power source mode.

4. (Original) The welding system of claim 3 wherein power source mode includes one of constant current and constant voltage.

5. (Original) The welding system of claim 1 wherein the signal causes the receiver to further instruct the controller to energize an output circuit of the power source upon activation of the trigger.

6. (Original) The welding system of claim 1 wherein the transmitter is further configured to produce a substantially rectangular voltage pulse of variable width.

7. (Original) The welding system of claim 6 wherein the width of the pulse is indicative of desired output of the power source.

8. (Original) The welding system of claim 6 wherein the transmitter is further configured to produce one pulse each time the trigger is activated.

9. (Previously Presented) The welding system of claim 1 wherein the wire feeder is connected to the electrode holder and connected to the power source via the weld cable, and wherein the transmitter is further configured to output a signal that causes the wire feeder to automatically supply consumable wire to the weld when a welding circuit is created between the electrode and the workpiece.

10. (Original) The welding system of claim 9 wherein the wire feeder includes a portable wire feeder.

11. (Previously Presented) The welding system of claim 1 wherein the controller includes voltage sensing circuitry designed to detect a start command from the transmitter through the weld cables and current sensing circuitry designed to detect arc current and maintain activation of the power source output when an arc current is present.

12. (Original) The welding system of claim 1 configured for at least one of a MIG welding process, a TIG welding process, a flux cored welding process, a stick welding process, a submerged arc welding process, and a gouging process.

13. (Currently Amended) A welding system comprising:

a power source configured to condition raw power and supply a power usable during a welding process;

a wire feeder configured to receive the power from the power source and supply a consumable electrode to a weld, the wire feeder having a torch connected thereto, wherein the torch is activated via depression of a pushbutton trigger mounted thereto;

~~a low frequency communication system having~~ a transmitter configured to detect activation of the torch and transmit ~~a low frequency~~ signal between approximately 10 milliseconds and 750 milliseconds to a receiver of the power source indicative of activation of the torch; and

a welding cable connecting the power source and the wire feeder such that the signal is transmittable thereacross from the transmitter to the receiver, the power source and wire feeder connected such that a voltage is not created across the weld cables until the transmitter transmits a signal to the receiver signaling that the torch has been activated.

14. (Original) The welding system of claim 13 configured to not have an open circuit voltage across the welding cables when the power source is powered on and the torch is not activated.

15. (Original) The welding system of claim 13 wherein the power source further includes circuitry such that a secondary power is not output until activation of the torch.

16. (Original) The welding system of claim 15 wherein the wire feeder is further configured without a contactor to close a circuit between a secondary power output of the power source and the torch.

17. (Original) The welding system of claim 13 wherein the transmitter is further configured to transmit the signal to the receiver encoded with information regarding desired operational parameters of the power source.

18. (Original) The welding system of claim 17 wherein the desired operational parameters include at least one of power source output magnitude, power source welding mode, purging, and jogging.

19. (Currently Amended) A method of remotely controlling a power source for welding comprising the steps of:

detecting activation of a triggering mechanism of a welding-type torch to initiate a welding-type process;

transmitting a ~~low-frequency~~ signal within a range of approximately 1.3 Hz to 100 Hz indicative of desired operational parameters of the power source through a weld cable connected between the power source and the triggering mechanism automatically upon activation of the trigger;

receiving the signal remotely from the trigger mechanism; and

controlling the power source in accordance with data embodied in the signal transmitted through the weld cable.

20. (Original) The method of claim 19 further comprising the step of preventing an open circuit voltage between the welding-type torch and the power source during non-activation of the trigger.

21. (Original) The method of claim 20 further comprising the step of only allowing current flow between the power source and the welding-type torch when the trigger is activated.

22. (Original) The method of claim 19 further comprising the step of transmitting a pulsed signal upon activation of the trigger through the weld cable, the

pulsed signal having a width indicative of a desired secondary output of the power source.

23. (Original) The method of claim 19 further comprising the step of receiving feedback of a voltage at a weld and automatically adjusting output of the power source based on the feedback.

24. (Original) The method of claim 23 further comprising the step of adjusting output of the power source to accommodate losses that occur across the weld cable between the power source and the welding arc.

25. (Currently Amended) A kit to retrofit a welder and wire feeder system, the kit comprising:

a ~~low frequency~~ transmitter to be disposed within a wire feeder and detect activation of a welding torch;

a ~~low frequency~~ receiver to be disposed within a power source and electrically connected to the ~~low frequency~~ transmitter through a single weld cable; and

a controller to regulate operation of the power source such that a welding-type voltage is not created across the weld cables until a signal between approximately 10 milliseconds and 750 milliseconds is received by the ~~low frequency~~ receiver from the ~~low frequency~~ transmitter to energize a secondary voltage.